

### REMARKS

Reconsideration is respectfully requested in light of the foregoing amendments and remarks which follow.

Claims 1-3 and 5-9 are before the Examiner. By this response, claim 10 is added. Table 5 clearly supports the range. No new matter is believed to have been introduced.

The withdrawal of the rejections of claim 9 under 35 U.S.C. 112, first paragraph and the rejection of claims 1-3 and 6-8 on the ground of non-statutory obviousness type double patenting are noted with appreciation. It appears from page 2 of the Advisory Action, that claim 9 was found to be directed to a patentably distinct invention relative to claim 3 of the '839 patent. The rejection of claims 1-3 and 6-8 required the terminal disclaimer.

Enclosed please find a Communication from the European Patent Office relating to the counterpart application. Evidence similar to that submitted here resulted in an indication of allowance.

Claim 5 is rejected under 35 U.S.C. 112, fourth paragraph, as being of improper dependent form for failing to further limit the subject of a previous claim. Applicants respectfully traverse.

The Examiner asserts that since the silica is not used in bulk form, the "compacted bulk density" limitation does not have any patentable weight and therefore "can not" not further limit claim 1 from which it depends.

Applicants submit that the trait is measured by an art recognized test, DIN ISO 787/XI, JIS K 5101/18 (not screened). Accordingly, it is a measurable characteristic and would further limit the independent claim. See Table 1. The meaning would be clear from the specification and would be understood.

Reconsideration is requested.

Claims 1-3 and 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Azechi et al (U.S. 6,331,558) in view of Scholz et al. (U.S. 2003/0195290). Applicants respectfully traverse.

It appears that the rejection was maintained due to the form in which the evidence was submitted. The evidence, provided in the last response, has been placed in the form of declaration signed by one of the co-inventors. Accordingly, it should be accepted and the rejection withdrawn.<sup>1</sup>

Applicants also submit that the Azechi et al. and Scholz et al. patent documents do not suggest the design concept which produces a silicone having the improved properties. The pieces have to be combined. There clearly needs to be some recognition of having both the vinyl and hydrophobic groups covalently linked to the surface of the destructured pyrogenic silica. The reaction with the silica surface OH groups needs to be complete. Also the role of the “low” structure of the silica in terms of the resultant rubber product properties needs to be known. One has to have some knowledge ahead of time as to what rubber properties are affected by silica destructuring and what rubber properties are not and other interactions.<sup>2</sup> Reliance on Applicants’ specification in that regard is not proper.

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<sup>1</sup> The evidence is based on the comparative showings reported in the specification. Table 2 (preparation) and Table 3 (physiochemical data) are instructive as to the general character of the inventive filler. Consider the comparative silica described in Table 3, a nondestructive product. The compared properties include: compacted bulk density, loss on ignition, pH, and C content percentage. The DBP values are consistent with a “low” structure product. The BET value of the “comparative silica” finds comparable values with some of the Sil 1-11 products. Table 2 reports SM mixtures for the Sil 1-11 products. Tables 5 (viscosity) and 6 (physiochemical properties) report the novel properties for the inventors’ silicone rubber product.

<sup>2</sup> Applicants have included with the previous response Technical Bulletin Pigments No. 12 “Degussa-Silicas for HTV-Silicone Rubber” and various Technical Information (TI) disclosures. In Bulletin No. 12, synthetic silica are discussed in sections 2.1 through 2.2.2; reinforcing properties are discussed in section 4 (Table 3 lists those studies); and compacted AEROSIL (“V grades”) is discussed in section 5.2. The Bulletin and disclosures highlight the unpredictability and interactions associated with the development of a product line. Relative to “low structure” products, consider TI 1349 and TI 1253, which discuss distinct low structure products- AEROSIL R 8200 (high tapped density, low BET, very hydrophobic (trimethylsilyl groups anchored to surface)). See page 10, Table 2 (page 11), and Table 3 (page 13).

Claim 1 describes a high tear propagation resistant silicone rubber containing as a reinforcing filler: silanized structurally modified pyrogenic silica, characterized by both vinyl groups fixed and hydrophobic groups --methyl silyl groups fixed to the silica surface area. The surface has a BET value between 10 and 1000 m.<sup>2</sup>/g. The structurally modified silica has a DBP value % < 200 or not determinable. The presence of both the vinyl and methyl groups are evident in Sil 3, 7 and 11 (examples 1-3). (Compare to AEROSIL R 8200 results in Bulletin above). The “destructuring” is absent in the comparative silica (See present Table 1). It would be fair and reasonable, from the evidence provided, to attribute the inventive silicone rubber properties to the presence of both the vinyl and hydrophobic groups on the silica surface and destructuring (“low” pyrogenic silica structure) of the underlying pyrogenic silica core.

The Alzechi et al. patent has been considered. There is no teaching of a need for both vinyl groups and hydrophobic groups to be affixed to the silica surface relative to improved high tear propagation resistance in silicone rubber. Also, there is no mention of destructured pyrogenic silica, especially, in the context of reduced viscosity.

Alzechi et al. do teach a hydrophobized silica fine. This is produced by a coating process. The C percentage amounts are consistent with a coating process. It is not clear that such a process insures a complete reaction of the silica OH groups. To attain completeness, Applicants employ conditions different from those employed by Alzechi et al.

The Scholz et al. patent has been considered. Scholz et al. do teach silicone rubber mixtures containing structure-modified hydrophobic pyrogenic silica. Scholz et al. do not recognize the role of a vinyl group relative to the property taught by applicants. Scholz et al. clearly shows dimethylsilyl affixed groups. See, e.g., Table 1. Table 4 discusses rheological properties.

Between Alzechi et al. and Scholz et al. there is no suggestion of the balance between the vinyl and methyl hydrophobic groups, especially when one considers the results presented in Table 6, examples 1-3. The Sil 11, Sil 11 and Sil 3 compositions are not suggested nor are the

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results, especially those of tear propagation resistance values of example 3. The Scholz et al. product is more akin to that discussed in TI 1209 and TI 1253 (AEROSIL 8200), which the present invention represents an improvement thereover.

Reconsideration is respectfully requested.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Azechi et al (U.S. 6,331,558) in view of Scholz et al. (U.S. 2003/0195290) as applied to claim 1 above, further in view of Kobayashi et al. (US 2002/0077412). Applicants respectfully traverse.

Azechi et al. and Scholz et al. are discussed above. It is submitted that the deficiencies noted above are not remedied by the teachings of Kobayashi et al.

Kobayashi et al. teach a six component water repellent silicone coating agent composition. One of the components is a hydrophobic surface treated dry process silica having a carbon content of 3.7 to 5% by weight and a bulk density of 40 to 99 g/L, or a hydrophobic surface treated dry process silica having a carbon content of 2.7 to 5% by weight and a bulk density of 100 to 300 g/L. The silica is not identified as pyrogenic, destructured or densified. No DBP values are given. The silica filler described in the claims is not taught.

Further, present Table 3 shows the influence of the structural modification on bulk density. There is a dramatic increase from 48 g/l for the comparative example to 132-266 g/l for Sil 1-11 while the BET surface area remains in the same order of magnitude. Therefore, the bulk density is a significant limitation to claim 1.

Further, bulk density is a common value to characterize powders (similar meaning as apparent density/powder density), which is not limited to bulk material.

Regarding Azechi, Applicants have submitted the Rule 132 Declaration, which compares Azechi's silicon rubber composition and the present invention. In the declaration, recalculated values from Table 1 (Azechi) and Tables 5-6 (present invention) are presented so a comparison

is facilitated.

As can be seen from the table, the hardness gives equivalent values. Elongation, tensile strength and especially viscosity of the present invention are lower than the values of Azechi's composition. In the declaration, it is stated that hardness and viscosity are the relevant values to compare silicon rubbers. It is noted that while the hardness values are similar, the viscosity values differ significantly. It is stated that the low viscosity of the present invention is due to the structural modification and that this is advantageous for injection molding. It is further stated that the results achieved are unexpected and reasons for this are set forth.

Reconsideration and withdrawal of the rejection are respectfully requested.

#### **Request for Interview**

Applicants respectfully request either a telephonic or an in-person interview should there be any remaining issues.

### CONCLUSION

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Therefore, it is respectfully requested that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

It is not believed that extensions of time are required, beyond those that may otherwise be provided for in accompanying documents. However, in the event that additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. 1.136(a), and any fees required therefore are hereby authorized to be charged to **Deposit Account No. 02-4300, Attorney Docket No. 032301.592.**

Respectfully submitted,

SMITH, GAMBRELL & RUSSELL, LLP

By: 

Thomas G. Wiseman, Reg. No. 35,046  
1130 Connecticut Ave., N.W., Suite 1130  
Washington, D.C. 20036  
Telephone: (202) 263-4300  
Facsimile: (202) 263-4329

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European Patent Office  
80298 MUNICH  
GERMANY  
Tel: +49 89 2399 0  
Fax: +49 89 2399 4465



Evonik Degussa GmbH  
DG-IPM-PAT  
Postcode 84/339  
Rodenbacher Chaussee 4  
63457 Hanau  
ALLEMAGNE

Eingang bei  
Intellectual Property  
Management

12. Okt. 2011

Standort Wolfgang

Formalities Officer  
Name: Ladumer, Yvan  
Tel: +49 89 2399 - 7913  
or call  
+31 (0)70 340 45 00

Substantive Examiner  
Name: Glomm, Bernhard  
Tel: +49 89 2399 - 7158

Application No. 05 715 268.8 - 2102	Ref. 2003P10112WE	Date 11.10.2011
Applicant Evonik Degussa GmbH <i>F: 11. Feb. 2012</i>		

#### Communication pursuant to Article 94(3) EPC

The examination of the above-identified application has revealed that it does not meet the requirements of the European Patent Convention for the reasons enclosed herewith. If the deficiencies indicated are not rectified the application may be refused pursuant to Article 97(2) EPC.

You are invited to file your observations and insofar as the deficiencies are such as to be rectifiable, to correct the indicated deficiencies within a period

of 4 months

from the notification of this communication, this period being computed in accordance with Rules 126(2) and 131(2) and (4) EPC. One set of amendments to the description, claims and drawings is to be filed within the said period on separate sheets (R. 50(1) EPC).

If filing amendments, you must identify them and indicate the basis for them in the application as filed. Failure to meet either requirement may lead to a communication from the Examining Division requesting that you correct this deficiency (R. 137(4) EPC).

Failure to comply with this invitation in due time will result in the application being deemed to be withdrawn (Art. 94(4) EPC).



HP00131320



Glomm, Bernhard  
Primary Examiner  
For the Examining Division

Enclosure(s): 1 page/s reasons (Form 2906)



Datum  
Date 11.10.2011  
Date

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Sheet 1  
Feuille

Anmelde-Nr:  
Application No: 05 715 268.8  
Demande n°:

The examination is being carried out on the following application documents

**Description, Pages**

2, 4-18 as published

1a received on 09-05-2007 with letter of 07.05.2007

1, 3 received on 05-04-2008 with letter of 03.04.2008

**Claims, Numbers**

1, 2 received on 19-10-2010 with letter of 19-10-2010

**1. Amendments (Art. 123 (2) EPC)**

The new claims 1 and 2 appear to comply with the requirements of the Art. 123 (2) EPC.

**2. Patentability (Arts. 54, 56 EPC)**

The Examining Division regards the amended claims 1 and 2 as being patentable. The applicant is invited to file a completely revised description, which should be brought into strict conformity with the new claims, without, however, violating the Art. 123 (2) EPC.